

**Colorado Department of Public Health and Environment
Hazardous Materials & Waste Management
Radiation Management Program
4300 Cherry Creek Drive South HMWMD-B2
Denver CO 80246-1530**

RADIOACTIVE MATERIAL LICENSE APPLICATION

INSTRUCTIONS: Refer to OR-RH-11 for a detailed explanation of the requirements for completing this application. This application must be signed and dated. An application fee in the amount specified in Part 12 of the *Colorado Rules and Regulations Pertaining to Radiation Control* must accompany an application for a new license. Mail the completed application, attachments, and fee payment to the Colorado Department of Public Health and Environment, Radiation Management Program, HMWMD – B2, 4300 Cherry Creek Drive South, Denver, Colorado 80246-1530. All radioactive materials licenses are issued in accordance with the general requirements contained in the State of Colorado *Rules and Regulations Pertaining to Radiation Control* and Title 25, Article 11, CRS.

1. Application for a New License:
This is an application for a new Radioactive Material License – Recovery Operations – Mill (at a single location). In accordance with the radiation fee schedule, dated March 2nd, 2009, Fee Category 2.A2 Class I, the annual fee of \$94,300.00. The Piñon Ridge Mill is subject to full cost fees, the annual fee will be due upon approval of the Radioactive Material License.
2. Applicant Name:
Energy Fuels Resources Corporation, a wholly owned U.S. subsidiary of Energy Fuels Inc., a Canadian Corporation
3. Tax Payer Identification Number:
55-0912046
4. Mailing Address:
**Energy Fuels Resources Corporation
44 Union Boulevard, Suite 600
Lakewood, Colorado 80228**
5. Department to use Radioactive Material:
Piñon Ridge Mill
6. Contact:
**Mr. Frank Filas, P.E.
Phone: 303-974-2140
Fax: 303-974-2141
E-mail Address: f.filas@energyfuels.com**
Indicate if you wish to receive informational notifications by e-mail: **Yes**

7. Facility Address:

**16910 Highway 90
Bedrock, Colorado 81411**

No radioactive materials at any address in Item 4: _____

The address listed in item #4 is the mailing address of the Energy Fuels corporate office in Lakewood, Colorado. No radioactive materials will be located at this office.

8. Radioactive Material Element and Mass	9. Chemical/Physical Form, Manufacturer and Model Number	10. Maximum Activity
A. Uranium Ore (contains natural uranium and decay products)	A. U-nat in various mineral forms, average grade of 0.23% (maximum ore pad capacity of 100,000 tons)	A. 60 Ci Ra-226 ^(a)
B. Yellowcake Product (contains natural uranium)	B. U ₃ O ₈ , UO ₂ , UO ₃ , UO ₄ (maximum storage of 330,000 lb. [360 55-gallon drums])	B. 85 Ci U-nat ^(b)
C. Byproduct Material 11e.(2) (contains decay products of natural uranium)	C. Tailings waste from the extraction of uranium and vanadium (Stored in three tailings cells with a full capacity of 2.4 million tons each)	C. 115 Ci U-nat, 1,400 Ci Ra-226, 1,400 Ci Th-230, and 1,400 Ci Pb-210 per tailings cell ^(a,c)
D. Cs-137 Density Gauges (15, see attached Figure 1)	D. Sealed Source, Thermo-Scientific DensityPro or equivalent	D. 10 – 200 mCi Cs-137 each

Note: Cs-137 check sources for radiation detection instruments will be on-site but are not included here as they will be generally licensed quantities, i.e. 10 µCi or less.

- a) Based on expected radium-226, thorium-230 and lead-210 activities in 0.23% grade uranium ore of 647 pCi/g for each radionuclide.
- b) Based on a specific activity of 565 pCi U-nat/mg yellowcake at 98.2% purity.
- c) Based on an expected U-nat activity in tailings of 53 pCi/g (1324 pCi/g U-nat in ore multiplied by 4% U-nat remaining in tailings after processing).

11. Purpose for Radioactive Material: (attach additional sheets if needed for items 8 through 11)

- A. **Receive uranium bearing ore, with the intent to concentrate into “yellowcake” and vanadium oxide (“black flake”).**
- B. **Store yellowcake product in a secure setting, with the intent to sell on the open market and transfer to authorized parties.**
- C. **Dispose of byproduct material, as defined by Section 11e.(2) of the US Atomic Energy Act, in an onsite tailings impoundment, with eventual transfer of long-term ownership to the Department of Energy or State of Colorado.**
- D. **Sealed source Cs-137 nuclear density gauges will be used for process material density measurements.**

12. The Radiation Safety Officer (RSO) is:

Mr. Steven H. Brown. See Attachment 1 for qualifications and certifications.

13. Individual Users:

- A. **Radiation Safety Officer (Mr. Steven H. Brown) has the sole responsibility for the use and management of all radioisotopes.**
- B. **Assistant RSO, Mr. Jess Fulbright**
- C. **Radiation/Safety Technicians (4), to be determined**
- D. **Quality Assurance Officer, Mr. Zachary Rogers, EIT**
- E. **GIS/AutoCAD Technician, to be determined**
- F. **Plant Manager, Mr. Robert R. Monok**
- G. **General Mill Foreman, Mr. Wallace W. “Butch” Brice**
- H. **Mill Foremen (4), to be determined**
- I. **Maintenance Foreman, Mr. Michael Rutter**
- J. **Chief Lab Chemist, to be determined**
- K. **Plant Metallurgist, to be determined**
- L. **Vice President of Regulatory Affairs, Mr. Frank J. Filas, P.E.**

The Piñon Ridge Mill Health and Safety Organization Chart is included with this application as Attachment 2.

Qualifications for these personnel and other key personnel are included as Attachments 1 and 3.

Technical qualifications of the RSO will be consistent with Section 2.4.1 of NRC Regulatory Guide 8.31 and qualifications of the Assistant RSO, QA Officer, and RSTs’ will be consistent with Section 2.4.2 of Regulatory Guide 8.31.

Typical RSO and Authorized User Training Course Outlines are included as Attachment 4.

14. Radiation Detection Instruments (attach additional sheets if needed)

Manufacturer and Model of Instrument/Probe	Surface Area	Radiation Detected	Number Available	Sensitivity Ranges	Efficiency (4π geometry)	Background reading
Ludlum 12S micro R meter	1” dia. x 1” thick	Gamma	TBD	175 cpm per uR/hr (¹³⁷ Cs)	N/A	N/A
Ludlum 43 series alpha detector	75 sq cm detector or equivalent	Alpha	TBD	N/A	35 % (²³⁹ Pu)	≤ 3 cpm
Ludlum 44-9 pancake GM probe	12 sq cm Pancake detector or equivalent	Alpha Beta Gamma	TBD	3300 cpm per mR/hr	< 1% - 32%	≤ 60 cpm
Ludlum 44-10 gamma scintillation probe	2” dia. x 2” thick	Gamma	TBD	900 cpm per uR/hr (¹³⁷ Cs)	N/A	≤ 9750 cpm
Ludlum 2241 series scaler/ratemeter	N/A	Alpha Beta Gamma	TBD	N/A	N/A	N/A
Ludlum 2929 alpha/beta sample counter	20.3 sq cm	Alpha Beta/ Gamma	TBD	N/A	Alpha: 37% - 39% Beta: 8% - 29%	Alpha: ≤ 3 cpm Beta/ Gamma: ≤ 80 cpm

Radiation detection instruments will be used for equipment, vehicle, air, and personnel radiation surveys as outlined in the radiological procedures, Appendix D of the Piñon Ridge Mill Health and Safety Plan (Exhibit J1).

15. Calibration of Radiation Detection Instruments

Frequency of Calibration:

Manufacturers recommended frequency.

Attach a copy of your calibration procedures. If a commercial service is to be used, provide the company's:

Instruments will be sent to the manufacturer (below) for calibration:

Ludlum Measurements Inc.

501 Oak Street

Sweetwater, Texas 79556

Radioactive materials license number:

LO1963 (Texas Commission on Environmental Quality)

16. Personal Monitoring Devices

(see Radiological Procedure RH-210, Piñon Ridge Mill Health and Safety Plan, Exhibit J1)

Type of Device:

TLD/OSL

Name of Supplier (must be NVLAP approved):

To be determined, but will be NVLAP certified

Radiation Detected:

Ionizing radiation, in the form of Gamma rays

Exchange Frequency:

Quarterly

Audible Radiation Dosimeter used (Y/N):

No

Pocket Dosimeter is used (Y/N):

No

(If audible and/or pocket dosimeters are used, attach calibration procedures)

17. Facilities and Equipment

A. Attach a description of the types of counting, handling, and safety equipment used in connection with radioactive materials.

Please see the Piñon Ridge Mill Health and Safety Plan, Appendix D Radiological Health and Safety Procedures (Exhibit J1).

B. Attach an explanatory sketch of your facility. Identify the locations of special handling equipment; fume hoods; storage containers; shielding; safety equipment; etc. Also identify the locations where radioactive material warning signs, Notice to Employees, and emergency telephone numbers are posted.

See Drawing 900-GA-003, Basic Engineering report Selected Drawings (Exhibit A1) for Laboratory and Change House Building Layout

See the Piñon Ridge Mill Facility Operating Plan for facility layout and Laboratory Facilities and Plans (Appendix D)

See the Emergency Response Plan (Exhibit J5) for safety equipment locations

Radioactive material warning signs will be posted in accordance with Procedure RH-030, Mill Health and Safety Plan (Exhibit J1)

Notice to employees and emergency telephone numbers will be posted at the Safety Department Office, Guard Gate, Administration Building, Change Room, Control Room, and Lunch room

- C. Public Dose Limits: Attach calculations and/or survey results to demonstrate compliance with dose limits for members of the public at all storage and use locations.

See the Estimates of Radiation Doses to Members of the Public from the Piñon Ridge Mill (Exhibit J2).

18. Attach a description of your radioactive materials program. The information must reflect your current program and procedures. (See instructions in OR-RH-11 for a list of procedures that must be included.)

See the Piñon Ridge Facility Operating Plan (Exhibit B2), Mill Health and Safety Plan (Exhibit J1), Estimates of Radiation Doses to Members of the Public from the Piñon Ridge Mill (Exhibit J2), Emergency Response Plan (Exhibit J5), Operational Monitoring Plan (Exhibit J6), Material Containment Plan (Exhibit J7) and Security Plan (Exhibit M1).

19. Waste Disposal

- A. Attach procedures for the disposal of radioactive waste:

The Radioactive Material License that Energy Fuels Resources Corporation is seeking will authorize disposal of radioactive materials in the on-site evaporation pond system (raffinate outflow from the plant) as well as disposal of solid radioactive materials (waste tailings from the milling operation) in one of three designed tailings cells. Following closure of the mill, the tailings management system will be reclaimed to appropriate long-term standards in accordance with 6 CCR 1007-1, Part 18 and Appendix A. The stabilized tailings will be transferred to the Department of Energy, Legacy Management Office or the State of Colorado for long-term custodial care. See the Tailings Cell Design Report (Exhibit A6), Evaporation Pond Design Report (Exhibit A7), Decommissioning Plan (Exhibit K1), Tailings Cell Closure Plan (Exhibit K2), and Specifications for Closure and Reclamation of Mill Facilities (Exhibit K3).

- B. If a commercial service is to be used other than to transport, then also specify the name, address, radioactive materials license number and expiration date of the company providing the services. Also describe the types of services provided. NOTE: Companies providing this service must have a Radioactive Materials License that authorizes this service.

Nuclear density gauges will be returned to the manufacturer of origin (below) for disposal.

**Thermo Fisher Scientific Process Instruments Division
1410 Gillingham Lane
Sugar Land, TX 77478**

**Radioactive materials license number:
L03524 (Texas Department of State Health Services)**

Expiration Date:

December 2017

Description of services provided:

Acquisition of sealed sources, technical support, calibration /repair, and compliant disposal.

20. Financial Assurance (refer to RH 3.9.5)

In accordance with RH 3.9.5, Energy Fuels Resources Corporation is committed to provide a financial assurance warranty for decommissioning in the amount of \$11,748,000 prior to approval of the License application. See the Piñon Ridge Mill Decommissioning and Reclamation Cost Estimate (Exhibit K4). Energy Fuels Resources Corporation will provide such financial assurance in the form of a cash deposit or certificate of deposit as provided by RH 3.9.5.4(2) or by a surety bond issued by a fidelity or surety company as provided by RH 3.9.5.4(3)(a).

21. CERTIFICATION:

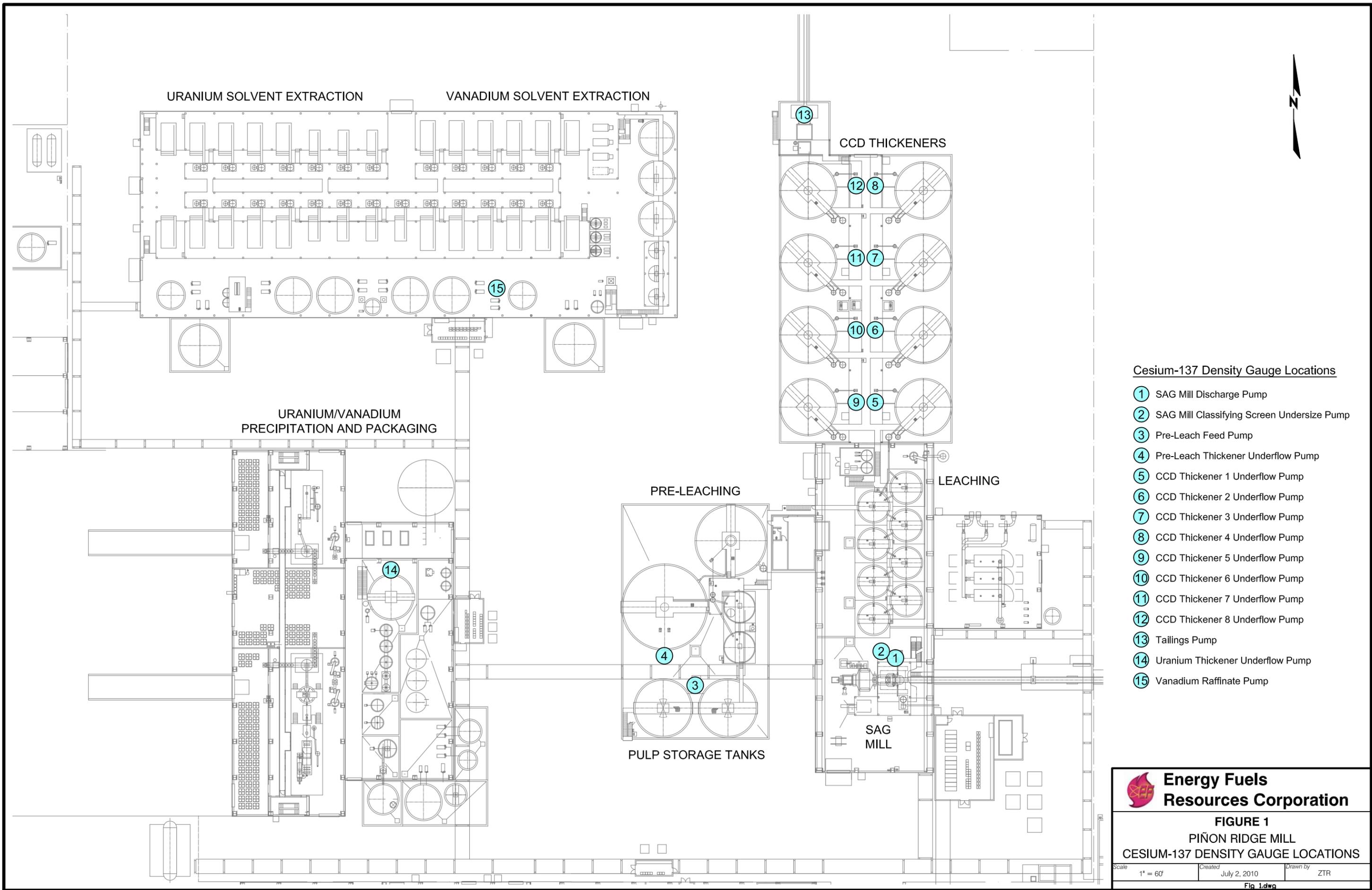
THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT RADIATION CONTROL REGULATION AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

Applicant Named in Item 2:

Energy Fuels Resources Corporation, a wholly owned U.S. subsidiary of Energy Fuels Inc., a Canadian Corporation

By:  Date: 11/6/09
Printed Name of Official: Mr. Stephen Antony
Printed Title of Official: Executive Vice President/Chief Operating Officer

Radiation Safety Officer:  Date: 11/6/09
Printed Name of Radiation Safety Officer: Mr. Steven H. Brown



Cesium-137 Density Gauge Locations

- ① SAG Mill Discharge Pump
- ② SAG Mill Classifying Screen Undersize Pump
- ③ Pre-Leach Feed Pump
- ④ Pre-Leach Thickener Underflow Pump
- ⑤ CCD Thickener 1 Underflow Pump
- ⑥ CCD Thickener 2 Underflow Pump
- ⑦ CCD Thickener 3 Underflow Pump
- ⑧ CCD Thickener 4 Underflow Pump
- ⑨ CCD Thickener 5 Underflow Pump
- ⑩ CCD Thickener 6 Underflow Pump
- ⑪ CCD Thickener 7 Underflow Pump
- ⑫ CCD Thickener 8 Underflow Pump
- ⑬ Tailings Pump
- ⑭ Uranium Thickener Underflow Pump
- ⑮ Vanadium Raffinate Pump

 Energy Fuels Resources Corporation		
FIGURE 1 PIÑON RIDGE MILL CESIUM-137 DENSITY GAUGE LOCATIONS		
Scale	Created	Drawn by
1" = 60'	July 2, 2010	ZTR
Fig 1.dwg		

Attachment 1
**Qualifications and Certifications of the
Radiation Safety Officer, Mr. Steven H. Brown**

STEVEN H. BROWN, M.S.

Certified Health Physicist

Mr. Brown is a board certified health physicist and diplomat of the American Academy of Health Physics with over 35 years of nuclear industry experience. He has worked as a licensee of the AEC/NRC and Agreement States in the commercial nuclear fuel cycle and as a contractor to the U.S. Dept. of Energy (DOE) in the U.S. nuclear weapons program. He is recognized as an expert in environmental, safety and health aspects of uranium processing facilities and is a member of national and international advisory committees. He was the ES&H and licensing manager and radiation safety officer for five large NRC/Agreement State uranium mills and several radiochemical laboratories. He has authored numerous technical papers and presentations on radiological and environmental aspects of actinides (uranium, plutonium) including uranium mining, milling and uranium in situ recovery. He is President Elect 2008 - 2009 of the Central Rocky Mountain Chapter of the Health Physics Society and Chairman of the Colorado Mining Association's Uranium Committee. His biographical synopsis appears in each edition of Marquis' *Who's Who in the World* since 1987.

EDUCATION

- M.S. Physical Science, West Chester University, Pennsylvania, 1974
- B.S. Physics, Temple University, Pennsylvania, 1971
- A.B.S. Radiological Health, Temple University, Pennsylvania, 1970

CERTIFICATIONS AND PROFESSIONAL AFFILIATIONS

- Certified in Comprehensive Health Physics, American Board of Health Physics (most recent recertification in 2006); Diplomat, American Academy of Health Physics
- American Board of Health Physics Certification Panel of Examiners (1988-1992) and Chair, Appeals Committee (2001);
- American Academy of Health Physics Nominating Committee (2004-2006)
- President, Rocky Mountain Chapter, Health Physics Society, 1982-1983 and 2008-2009;
- Session Chair, "Alternative Uranium Recovery Technology", International Conference on Radiation Hazards in Mining, Golden, 1982;
- General Chairman, 18th Midyear Symposium ("Environmental Radiation"), National Health Physics Society, Colorado Springs, 1985;
- U.S. (American Nuclear Society) Representative to International Conference on Radiation Hazards in Mining, Beijing, 1986;
- Adjunct Professor, Colorado School of Mines, 1988-1990 (graduate courses in radiological risk assessment and nuclear safety);
- WM Symposia Program Committee, 1991 – present, Co-Chair of Uranium and FUSRAP sessions;

- International Conference on Environmental Management Program Committee, 2003- present, Track Co - Chair, Environmental Restoration.
- Chairman, Uranium Committee, Colorado Mining Association, 2007 – present
- Member, International Atomic Energy Agency, Uranium Mining Remediation and Evaluation Group

EXPERIENCE

SHB Incorporated, Centennial, Colorado, May 2007 – present

President/ Independent Consultant - providing radiation protection, safety analysis, and environmental assessment and licensing support to nuclear projects primarily focused in the Uranium industry. Recent examples include:

Uranium In Situ Recovery (ISL/ISR) Project, Weld County, Colorado: Designed and providing oversight of execution of pre operational radiological baseline program involving sampling and analysis for radionuclides in soil, ground and surface water, air and vegetation. Currently preparing radiological sections of radioactive (source) material license to be submitted to Colorado per State and US NRC requirements for licensing of uranium mills and in situ recovery facilities. Responsibilities in this regard include preparation of license application sections on radiological baseline; operational health physics and environmental monitoring and impact assessment. This work is conducted in accordance with US NRC Regulatory Guides 3.46, 3.8 and 4.14, NUREG 1569 and Colorado Department of Public Health and Environment Radiation Management Unit requirements @ CCR 6 CCR 1007-1, Parts 3, 4 and 18.

Pre Operational Radiological Baseline Programs – Uranium ISL/ISR projects in Wyoming and New Mexico: Developed “generic” model and methodology for radiological characterization program that could be applied to multiple ISL/ISR projects with infusion of site-specific demographic data. Prepared in accordance with US NRC Regulatory guides 3.46, 3.8 and 4.14 and NUREG 1569.

Characterization of Abandoned Uranium Mine Lands – provided radiological services regarding numerous abandoned uranium mines across New Mexico. These sites dating back to the 1960s require characterization and possible remediation. Radiological characterization programs are being developed to assess the variability of natural background across these mineralized sites within human enhanced radiological exposure conditions in complex radiological environments.

Pre Operational Radiological Baseline Programs – Uranium ISL/ISR and conventional mining / milling projects in Mongolia: design and execution of pre operational radiological baseline programs for two ISR projects in Mongolia. Work involves development of conceptual site models for assessment of environmental pathways of exposure to humans and other critical receptors; preparation of numerous field sampling and analysis procedures, sampling and analysis and health and safety plans. Plans and procedures prepared in accordance with international “best practices” (IAEA, Canada, US, etc)

Shaw Environment and Infrastructure, 1992 – 2007 (Shaw purchased IT Corporation in 2002)

Vice President, Radiological Operations Manager - Managed and provided oversight of radiation protection, safety and environmental compliance and nuclear safety programs at Shaw E&I Federal projects including five major U. S. Army Corp of Engineers (USACE) Formerly Utilized Sites Remedial Action Program (FUSRAP) uranium and thorium contaminated sites and numerous Dept. of Energy (DOE) nuclear programs and projects across the U.S.. Radiation Safety Officer under Shaw’s broad scope NRC license authorizing possession and use of a wide range of radioactive materials for conduct of decontamination, decommissioning and radioactive waste management at sites across the U.S.. Provided technical direction and corporate oversight to projects in radiation protection and operational health physics, nuclear and industrial

safety, integrated safety management, quality assurance and environmental monitoring and impact assessment.

Director, DOE and Nuclear Programs, Dames and Moore, 1987-1992

Procured, managed and provided technical consulting for projects involving environmental, radiological, regulatory, and/or health-related aspects of nuclear facilities. Responsible for procuring and managing work assignments with U.S. DOE field offices and sites and commercial nuclear facilities. Built a nuclear services division “from scratch” which included line management and operational (e.g., profit/loss) responsibility for an organization which he grew to over 120 professional and support staff including establishment of several new company offices (Albuquerque, NM. Idaho Falls, ID.; Richland, WA.). Scope of services included radiation protection; industrial hygiene and safety, environmental monitoring and assessment, radioactive waste management and associated regulatory compliance (RCRA/CERCLA).

Senior Radiological Engineer, West Valley Demonstration Project, Dames and Moore, West Valley, N.Y., 1985 - 1987

As senior radiological and safety engineer at DOE's West Valley Demonstration Project, performed radiological hazard, safety analysis, and risk assessments for high-level nuclear waste processing systems at West Valley. Project Manager for preparation of environmental assessments (EA) and preliminary and final safety analysis reports (PSAR/FSAR) for the supernatant treatment and for the vitrification systems. These processes involved the treatment and solidification into borosilicate glass of 30 million curies of mixed fission products and actinides (uranium, plutonium) and cementation of resultant low level wastes.

Principal Safety Analysis Engineer and Project Administrator, Rockwell International, Rocky Flats Plant, Golden, Co., 1982-1985

Performed radiological and nuclear safety assessments for uranium and plutonium operations at Rocky Flats. Techniques included Failure Mode and Effects Analysis (FMEA), Fault and Event Tree Analysis (FETA) and developed Operational and Technical Safety Requirements (OSR, TSR) and Limiting Conditions of Operations (LCO) for plutonium and uranium processing and product manufacturing systems. Performed accident analyses

and co-authored Safety Analysis Reports (SARS) for 8 nuclear weapons facilities.

Manager, Western Regional Office, Radiation Management Corp., Denver, Colorado 1980-1982.

Provided radiological and environmental consulting for uranium mills in Wyoming, New Mexico and Texas and for uranium conversion and fuel fabrication facilities. Prepared numerous licensing, health physics, environmental assessment and monitoring, and permitting documents and prepared compliance manuals and procedures. Performed environmental risk and radiological fate/ transport/ dose assessments to develop alternative concentration limits (ACL) in groundwater for remediation of uranium mills and uranium mill tailings impoundments under purview of Uranium Mill Tailings Remedial Action Program (UMTRA). As regional office manager, had profit/loss responsibility for consulting office of 10 professionals and support staff.

Manager, ES&H and Radiation Safety Officer, Westinghouse Electric (Wyoming Mineral) Corporation, Uranium Operations, Lakewood, Colorado 1975 - 1980.

Licensed, developed and administered health protection and environmental compliance programs for five commercial and several pilot scale uranium milling facilities including in situ (leach) recovery, conventional mills, uranium as byproduct from phosphoric acid production and from copper mining. Line manager for industrial hygiene and safety, licensing, radiation protection and environmental compliance functions and corporate radiation safety officer under numerous NRC/Agreement state operating licenses. Supervised HQ and mill site staffs including over 40 hygienists, health physicists, industrial safety and environmental professionals and technicians.

Instructor, School District of Philadelphia, Pa. 1971 - 1975

Instructor of chemistry, biology, physics, and mathematics at secondary (high school) level.

Health Physicist, Temple University, Philadelphia, Pa. 1968 - 1971

Responsible for conducting radiation surveys at numerous University facilities including research laboratories, nuclear medicine facilities, and radiographic facilities.

PUBLICATIONS – A few selected curriculum vitae relevant to uranium mining and milling

Brown, S. 1982, *Radiological Aspects of Uranium Solution Mining*, In: Uranium, 1, 1982, p37-52, Elsevier Scientific Publishing Co.

Brown, S and Smith, R, 1980, A Model for Developing the Radon Loss (Source) Term for a Commercial In Situ Leach Uranium Facility, In: M Gomez (Editor), *Radiation Hazards in Uranium Mining – Control, Measurement and Medical Aspects*, Soc. Min. Eng., pp 794-800.

Brown, S, 1980, Characteristics of Yellowcake and Implications for Uranium Mill Bioassay Programs, National Health Physics Society Annual Meeting, Seattle

Brown, S, 2007, *Radiological Aspects of In Situ Uranium Recovery*. American Society of Mechanical Engineers, Proceedings of 11th International Conference on Environmental Management, Bruges, Belgium, September; ASME Press, New York, NY, ISBN 0-7918-3818-8

Brown, S, 2008, The New Generation of Uranium In Situ Recovery Facilities: Design Improvements Should Reduce Radiological Impacts Relative to First Generation Uranium Solution Mining Plants (In press). International Atomic Energy Agency, “Low environmental impact uranium mining and remediation:15 years of multinational experience through Uranium Mine Remediation Exchange Group”, IAEA- TECDOC-Number to be assigned, IAEA, Vienna , (2008)

Brown, S, 2008, The Resurgence of Nuclear Power: Impact on The Health Physics Profession – The Uranium Recovery Industry. Health Physics Society, Health Physics News, Volume XXXVI, Number 9, September

American Board of Health Physics

Be it known that

Steven H. Brown

has satisfactorily met the professional standards established by the

American Board of Health Physics

and is hereby certified in

HEALTH PHYSICS

October 27, 1983
date

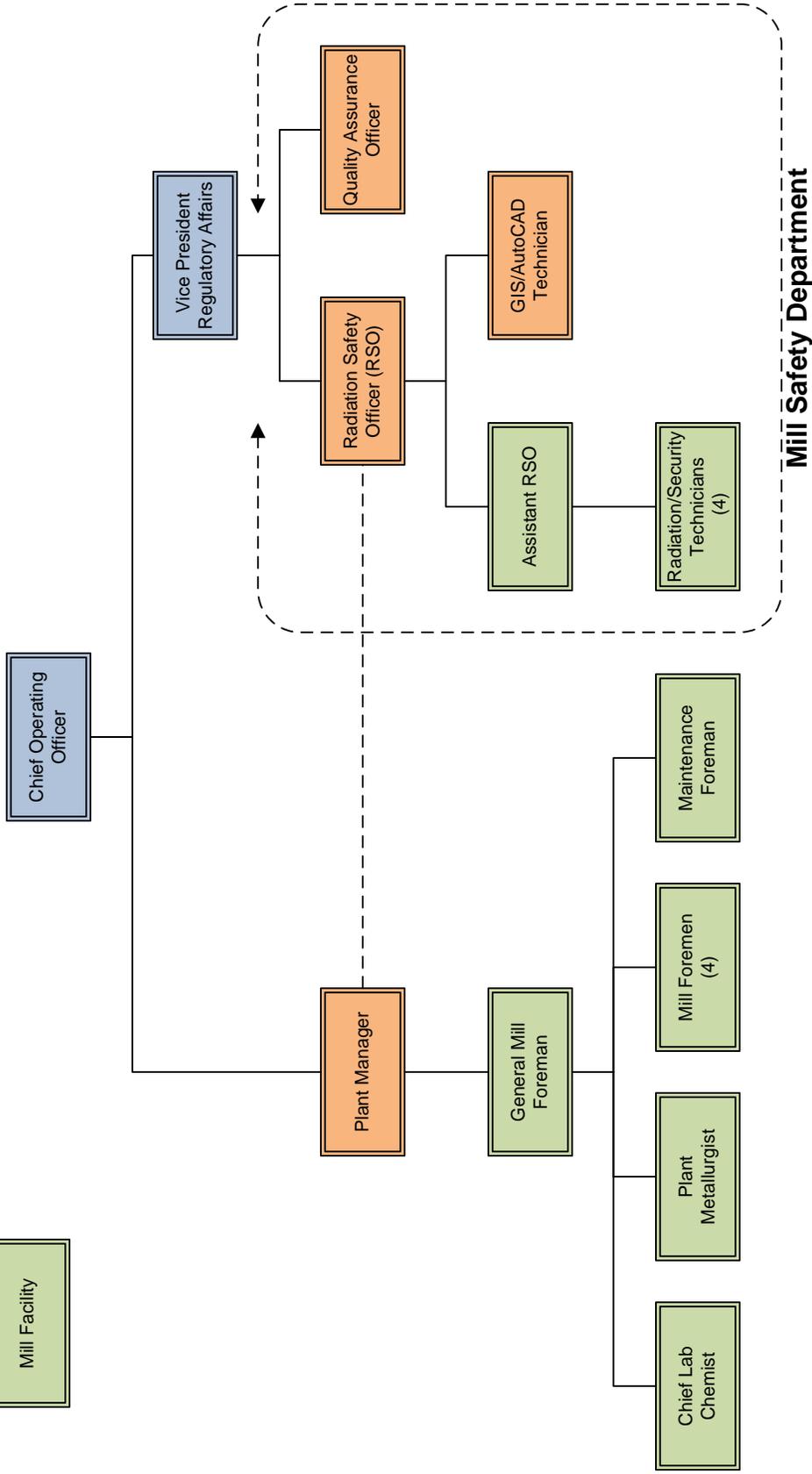
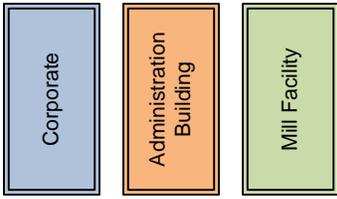
chairman

secretary



Attachment 2
Piñon Ridge Mill Health and Safety Organization Chart

Piñon Ridge Mill Health and Safety Organization Chart



Attachment 3
Qualifications of Key Personnel

EDUCATION

Mesa State College – 1977

Trinidad State Junior College –
1981

BOAC Management Course –
1982

Department of Housing and
Urban Development – Specialist
– 1986

Larimer County Vo-Tech – 1987

Certified Retail Industry Analyst –
1991

North Carolina State University
Industrial Extension Service –
Safety & Health Management
Systems – 2007

Mine Radiation Monitoring and
Reporting – Ben Kilgore – 2007

MSHA QUALIFICATIONS

<u>Date</u>	<u>Description</u>
1981	Impoundment Inspection
1981	Noise Level Testing
1981	Dust Equipment Calibration & Maintenance (UG/SUR)
1981	Dust Sampling (UG/SUR)
1981	Methane Underground
1981	Oxygen Deficiency (UG)
1981	Methane Surface
1981	Oxygen Deficiency (SUR)

MSHA CERTIFICATIONS

<u>Date</u>	<u>Description</u>
10/31/81	Dust Cal/Main (UG/SUR)
10/31/81	Dust Sampling (UG/SUR)
11/24/81	Instructor – Noise Generation and Control
06/21/07	Instructor – Unlimited

SUMMARY

Mr. Fulbright implements all phases of the baseline data collection program for the Piñon Ridge Mill. Mr. Fulbright is responsible for submittal, management and implementation of all health and safety plans, policies and programs required by the Mine Safety and Health Administration (MSHA) for Energy Fuels' mining properties. These responsibilities included design of the Diesel particulate Matter (DPM) Monitoring Program, Emergency Escape Plan, Gamma Exposure Monitoring Program, Ground Control Plan, Hazard Communication Program, Hearing Conservation Plan, Radon Daughter Monitoring Program, Respirable Dust/Silica Monitoring Program, Training Plan and Underground Emergency Response Plan. In addition, Mr. Fulbright composes, conducts and documents all health and safety training for Energy Fuels and has recently assumed responsibility for weed control and reclamation field activities on BLM and DOE properties. Mr. Fulbright also coordinates the San Juan Mine Rescue Cooperative, which involves total management of the cooperative covering eleven member companies.

EXPERIENCE

Mr. Fulbright has more than 11 years of experience in the mining industry, including over 7 years in the mine safety and health field.

His employment history includes:

- Energy Fuels Resources; Safety Director (2007-Present)
- Fruita Consumers Cooperative/Timberline ACE Hardware, Nucla/Telluride, CO; Store Manager (1990-2007)
- FPI Management, Sacramento, CA; Project Director (1985-1990)
- Carbon County Coal Company, Hanna, WY; Safety Coordinator (1980-1985)
- Dave Blake Mining, Nucla, CO; Contract Uranium Miner (1978-1980)
- Ranchers Exploration and Development Company (aka Durita Development), Naturita, CO; Solvent Extraction Operator (1977-1978)
- Union Carbide Corporation, Uravan, CO; AeroFall Ball Mill Operator (1977)

Special Note:

During his tenure with Carbon County Coal Company, Mr. Fulbright had the privilege of serving on the Rescue Raider Mine Rescue Team in the capacity of Map Man. The Rescue Raiders were nationally ranked first in Mine First Aid and second in Mine Rescue at the 1981 National Mine Rescue and First Aid Contest in Louisville, Kentucky.



Zachary Rogers, EIT

Environmental Engineer

EDUCATION

B.S., Biochemistry, University of Michigan, Ann Arbor, MI (2000).

REGISTRATION

Engineer Intern, State of Colorado (2006)

SUMMARY

Mr. Rogers manages the baseline data collection program for the Piñon Ridge Mill including sampling and analysis of groundwater, surface water, PM-10, total suspended particulates, radon, gamma dosimetry and meteorological data at several on-site and off-site locations. Mr. Rogers produced various plans for the mill application including the Health & Safety Plan, Emergency Response Plan, Material Containment Plan and SPCC Plan. In addition, Mr. Rogers is involved in permitting of Energy Fuels local uranium mines and manages the environmental compliance programs for the mines following permit issuance.

EXPERIENCE

Mr. Rogers has more than 16 years of experience in environmental consulting. Recent work includes uranium mill and mine permitting, uranium mine compliance, and closure work at the former Rocky Flats Site. Other work included spill prevention, control and countermeasure compliance; environmental site assessments; hazardous waste characterization and disposal; environmental remediation; erosion and sedimentation control; stormwater management and compliance. He also has considerable AutoCAD experience. Mr. Rogers mine experience includes permitting of and compliance with small and large mine permits; surface water, groundwater, and stormwater discharge permits; water rights; well permits; air permits; stream alteration permits; 404 permits; and various county level permits.

His employment history includes:

- Energy Fuels Resources; Environmental Engineer (2007 – Present)
- Tetra Tech EM, Inc., Denver, CO; Environmental Engineer (2005-2007)
- Rocky Flats Closure Site Services, LLC, Golden, CO; Principle Environmental Engineer (2004-2005)
- Lakeshore Engineering Services, Detroit, MI; Environmental Engineer (1997-2004)
- Espinoza Consultants and Services, Adrian, MI; Field Engineer (1992-1997)



EDUCATION

M.B.A., University of Denver
Denver, CO (1977)

B.S., Metallurgical
Engineering, Colorado School
of Mines, Golden, CO (1971)

MEMBERSHIPS

Society for Mining, Metallurgy
and Exploration

Colorado Mining Association

SUMMARY

Energy Fuels Resources has retained Mr. Monok to manage the planning, design and construction phases of the new Piñon Ridge Mill project. This uranium and vanadium processing mill is located in western Colorado, and will be the first new mill built in more than 20 years. With his extensive experience in processing operations, engineering design and management, Bob is directing and coordinating with design and engineering consultants to ensure that the project meets the aggressive completion schedule and maintains compliance with all regulatory agencies.

EXPERIENCE

Robert Monok has more than 35 years of operations, procurement, construction, commissioning, and management experience in the mining industry. Robert's experience includes project management during all phases of project development including feasibility studies, basic and detailed engineering, procurement, contracts administration, cost control, scheduling, construction and commissioning.

Bob has strong management skills and leadership abilities that ensure that projects he manages will be completed accurately within the allotted time and that the fiscal budget will be met or exceeded. His operations experience enables him to firmly perceive the way a project must "work" upon completion of the engineering and commissioning phases of the project. His management style and organizational capabilities, then, provide him with the foresight necessary to complete a project development outline, which uses the optimum amount of resources and personnel needed to achieve the desired results. Following is a summary of his employment history:

- Robert R. Monok, Technical Consultant (2000-Present)
- SNC-Lavalin America, Inc., Englewood, Colorado, Project Manager (1996-2000)
- USMX, Inc., Lakewood, Colorado, Construction Manager (1995-1996)
- Minproc Engineers, Inc., Englewood, Colorado, Project Engineer (1990-1995)
- Mineral Technology, Englewood, Colorado, Project Manager (1989-1990)
- Bateman Engineers, Inc., Lakewood, Colorado, Project Engineer (1986-1989)
- Stearns-Roger Corporation, Denver, Colorado, Project Engineer (1978-1986)
- University of Denver, Denver, Colorado, Graduate Student (1976-1978)
- Asarco Inc., Casa Grande, Arizona Mill Foreman (1973-1976)
- Cities Service Company, Copperhill, Tennessee, Metallurgist (1971-1973)



Wallace W. “Butch” Brice

Mill Consultant

EDUCATION

High School Graduate

SUMMARY

Energy Fuels Resources has retained Mr. Brice to provide technical input on all aspects of the Piñon Ridge Mill design including equipment design and layout, maintenance procedures, operating systems, health and safety considerations, and mill optimization. Butch has over 40 years of relevant experience working in all aspects of uranium milling operations from laborer through plant manager.

EXPERIENCE

Mr. Brice joined Union Carbide Corporation in 1958 at the Uravan Mill as a laborer and, over a twenty year period, advanced to the position of maintenance foreman. From 1979 to 1983, he was the maintenance superintendent at Union Carbide's Gas Hills Mill in Wyoming. He served in a similar position at the White Mesa Mill from 1984 to 1990, at which time he was promoted to Plant Manager. As Plant Manager, he was responsible for maintenance, engineering, health and safety, and environmental affairs at the mill and for maintaining compliance with NRC, MSHA, and State of Utah regulations.

From 1997 to 2002, he was employed by OHM at the DOE Monticello Remediation Project starting as a general shift foreman and ultimately became project manager. The project included: construction of a 40 acre tailings cell; excavation, haulage and placement of 2.5 million cy of tailings and contaminated soil; and construction of an engineered cover. Butch has also worked in a consulting capacity for Shaw Environmental at the Moab Tailings Remediation Project and for CH2M Hill and Energy Fuels Resources in the development of the Piñon Ridge Mill design. Following is a summary of his employment history:

- Technical Consultant for Shaw Environmental, CH2M Hill, and Energy Fuels Resources (2002 – Present)
- OHM Remediation Services/The IT Group, Monticello, Utah, Monticello Remediation Project Manager (1997-2002)
- Self Employed Contractor and Consultant, Blanding, Utah (1994 – 1997)
- Union Carbide Corporation, Blanding, Utah, White Mesa Plant Manager (1990-1994)
- Union Carbide Corporation, Blanding, Utah, White Mesa Maintenance Superintendent (1984-1990)
- Union Carbide Corporation, Gas Hills, Wyoming, Mill Maintenance Superintendent (1979-1983)
- Union Carbide Corporation, Uravan, Colorado, Mill Maintenance Foreman (1958-1979)



Michael Ray Rutter

Maintenance Supervisor

EDUCATION

Effective Maintenance Management Seminar (2008)

NEC Code Class (1996, 2007)

CERTIFICATIONS

Crane Operator, up to 100-ton, 2002

CPR, 2010

Medical First Responder, 2010

SUMMARY

Mr. Rutter oversees all maintenance and scheduling for Energy Fuels Colorado and Utah mines. His responsibilities include electrical maintenance of mining equipment and construction at the Whirlwind Mine and Energy Queen Mine and baseline data collection equipment maintenance at the Piñon Ridge Mill. He also participates as a First Responder and Firefighter for the La Sal Volunteer Fire Department.

EXPERIENCE

Mr. Rutter has more than 11 years experience as an electrician and he has been working in the mining industry for more than 6 years. His mining industry work includes high-voltage electrical construction and maintenance, vehicle maintenance, heavy machinery operation, inventory maintenance, contractor oversight, planning, bidding, scheduling, and invoicing of projects, employee training, and safety and first aid experience. His electrical work includes management, project estimation, commercial and residential wiring, and NEC Code compliance.

His employment history includes:

- Energy Fuels Resources; Maintenance Supervisor (2007-Present)
- La Sal Volunteer Fire Department, La Sal, UT; First Responder/Firefighter (2005-Present)
- Lisbon Valley Mine, La Sal, UT; Maintenance Planner (2005-2007)
- Asarco Inc. – Silver Bell Complex, Marana, AZ; High-Voltage Electrician (2004-2005)
- First Rate Electric, Tucson, AZ; Lead Electrician (2001-2004)
- Aarmor Electric, Vail, AZ; Lead Electrician (2000-2001)
- Electrical Excellence, Tucson, AZ; Service Department Supervisor (1999-2000)



EDUCATION

M.S. Environmental Science and Engineering, Colorado School of Mines - Golden, CO, 1996

B.S. Mining Engineering, University of Wisconsin - Madison, WI, 1978

Exchange student in Monterrey, Mexico (1975 - 1976)

REGISTRATION / CERTIFICATIONS

Registered Professional Engineer: Colorado, Utah, Arizona, New Mexico, Oklahoma, and Wyoming

Certification: Hazardous Waste Management, Colorado School of Mines - Golden, CO, August 1991

MEMBERSHIPS

Society for Mining, Metallurgy, and Exploration, Inc. (SME) - Past Chair, Professional Registration Committee

Colorado Mining Association

PUBLICATIONS / PRESENTATIONS

Author: Excavation, Loading, and Material Transport, Chapter 12 of the Mining Reference Handbook (SME 2002)

Editor: Study Guide for the Professional Registration of Mining/Mineral Engineers, 6th Ed. (SME 2001)

SUMMARY

Mr. Filas is Energy Fuels' Environmental Manager, currently responsible for directing the environmental compliance and permitting for the company's uranium mines and the design and permitting of a new uranium processing mill. This work entails coordinating with local, State and Federal agencies and numerous environmental consultants to acquire needed permits and ensure compliance with air, water and land use regulations.

EXPERIENCE

Mr. Filas is a Professional Engineer with 30 years of experience in mining, construction & environmental work. His environmental expertise includes environmental assessments, site permitting, permit compliance, environmental audits, site decommissioning and cleanup, mine and mill reclamation, surface and ground water evaluations, and water treatment. Frank has a strong technical background in geology, hydrology, geotechnology, reclamation, and construction management, and has worked at mines as a miner, mine engineer, foreman, and shifter in both surface and underground mines.

Frank's experience includes 10 years in regulating, consulting to, and working for the uranium mining industry at both mill and mine sites. His employment history includes:

- Energy Fuels Resources (2006 to Present)
- Tetra Tech EM Inc., Denver, Colorado, Senior Project Manager, (2005 to 2006, Part-Time)
- Knight Piésold and Co., Denver, Colorado, Senior Environmental Engineer, (2005 to 2006, Part-Time)
- Smith Environmental Inc., Westminster, Colorado, Senior Environmental Engineer (2002 to 2005)
- EnecoTech Inc., Denver, Colorado, Project Manager/Senior Project Engineer, (2000 to 2002)
- Real Del Monte Mining Corporation Environmental Manager, Denver, Colorado (1997 to 1999)
- Canonie Environmental Services, Englewood, Colorado, Project Supervisor/ Project Engineer (1991-1997)
- Western States Minerals Corporation, Wheat Ridge, Colorado, Environmental Engineer (1989 - 1991)
- Atlas Gold Mining Inc., Eureka, Nevada, Mine Shift Foreman and Mine Engineer, (1988 to 1989)
- Utah Division of Oil, Gas and Mining, Salt Lake City, Utah, Reclamation Engineer, (1986 to 1988)
- Valley Camp of Utah, Scofield, Utah, Underground Coal Miner (1981 to 1986)
- Monterey Coal Company, Carlinville, Illinois, Mining Engineer, (1978 to 1980)



Stephen P. Antony, P.E.

Executive Vice President and Chief Operating Officer

EDUCATION

MBA, University of Denver,
CO (1979)

BS, Metallurgical Engineering,
Colorado School of Mines,
Golden, CO (1971)

REGISTRATION

Professional Engineer:
Colorado, Utah, Arizona

MEMBERSHIPS

- Colorado Mining Association
- Mining and Metallurgical Society of America (MMSA)
- Society of Mining, Metallurgical and Exploration (SME) (Past Chairman, CO Subsection 1990)
- Mineral Process Division of AIME (MPD)
- Prospectors & Developers Association of Canada
- Vice President and Treasurer – Colorado Lambda Alumni Association at Colorado School of Mines
- Boy Scouts of America – Certified Adult Leader

MILITARY SERVICE

Captain, U.S. Army Corps of Engineers (1972-1974)

SUMMARY

As an Officer of Energy Fuels Resources, Mr. Antony directs the daily operations of the company in Colorado, Utah and Arizona. This includes all aspects of uranium property exploration and acquisition, ore production and mill processing, as well as the design, permitting and construction of a new ore processing mill. He works closely with the President and Board of Directors on establishing growth strategy and near-term and long-term objectives for the company.

Steve also served as Manager of Technical Services with Energy Fuels Nuclear (EFN), and its subsidiaries from 1986 to 1992. During that time EFN was the nation's top uranium producer for three consecutive years, peaking at more than 5 million pounds annually. He authored many of the feasibility studies which provided justification for EFN's expansion of their highly successful breccia pipe mine projects in the Arizona Strip.

EXPERIENCE

Mr. Antony has over 35 years of varied Executive and Managerial experience in evaluating, developing and managing mining properties and environmental reclamation projects, primarily within the energy minerals area. He has significant experience at all organizational levels in both the domestic and international arenas. His extensive managerial experience ranges from project management and business expansion through acquisition, grass-roots development and marketing of professional engineering/construction services. He is also experienced in design engineering and construction management. Following is a summary of his employment history:

- Energy Fuels Resources, Executive Vice President and Chief Operating Officer (2005 – Present)
- Business Development / Management Consultant (1998 - 2006)
- Morrison Knudsen Corporation, Director, Business Development (1997 - 1998)
- Lyntek, Incorporated, Vice President, Business Development (1995 - 1997)
- Power Resources, Inc. (PEI Subsidiary), Director, Marketing (1994 - 1995)
- Landmark Reclamation, Inc., President (1992 - 1994)
- Energy Fuels / Concord Group Affiliates (EFCG) (1986 - 1992)
 - Landmark Reclamation, Inc., (EFCG Subsidiary) Vice President, Marketing (1988 - 1992)
 - Energy Fuels Nuclear, Inc. (EFCG Subsidiary), Manager, Technical Services (1986 - 1992)
 - Goldstar Mining Company (EFCG Subsidiary), General Manager (1987 - 1989)
- Mobil Oil, Mining and Minerals Company, Engineering Supervisor, Technical Services (1982 - 1986)
- Cyprus Coal Company, Senior Staff Design Engineer (1980 - 1982)
- Zapata Fuels, Inc. (ZFI) Affiliates (1974 - 1980)



Attachment 4
Typical RSO and Authorized User
Training Course Outlines

Nevada Technical Associates, Inc.
Radiation Safety Officer
Course Outline

Starting time: 8:30 each day. The course will end at about noon on Friday. The topics below will be more or less evenly distributed over the duration of the course. Attendees will receive a manual of several hundred pages and a course certificate.

1. Introduction
 - a. Course objectives and schedule
 - b. Origins of nuclear science
 - c. Atomic structure, isotopes, nuclear stability
 - d. Equations of radioactive decay

2. Radioactive Decay Processes
 - a. Alpha emission
 - b. Beta emission
 - c. Gamma emission
 - d. Other decay processes
 - e. Statistics of radioactive decay

3. Radiation Detection and Measurement
 - a. Gas-filled chambers
 - b. Scintillation detectors
 - c. Semi-conductors
 - d. Photographic emulsions

4. Interaction of Radiation with Matter
 - a. Modes of interaction
 - b. Heavy charged particle interactions
 - c. Beta particle interaction
 - d. Gamma ray interaction
 - e. Neutron interaction

5. Biological Effects of Radiation

- a. Radiation quantities and units
- b. Quality factors
- c. Biological effects
- d. Mechanisms of biological damage
- e. Acute, whole-body gamma radiation
- f. Risk of stochastic effects
- g. Fatality rates in various industries
- h. Radiation dose from natural and man-made sources

6. Shielding

- a. Charged particle shielding
- b. Photon shielding
- c. Neutron shielding
- d. Facility shielding

7. Personnel Radiation Dosimetry Devices and Methods

- a. External monitoring
- b. External dose evaluation
- c. Internal monitoring
- d. Internal dose assessment

8. Federal and State Regulations

- a. Chronology of standards
- b. Sources of standards, recommendations and requirements
- c. Basis of Standards
- d. Current regulations
- e. Licensing procedure

9. Radiological Safety Surveys, Records and Documentation

- a. Surveys and inspections
- b. Radiological Controls and ALARA
- c. Records and documents
- d. Operating and emergency procedures and document control

10. Radioactive Material Transportation and Disposal Regulations

- a. Applicable regulations
- b. Categories, packaging and limits
- c. Manifests, records, markings, and labels
- d. Radwaste disposal methods, sites, records and regulations

11. Radiological Emergencies

- a. Definitions, classifications and phases
- b. Notifications and assistance
- c. Response: isolation, radiation and medical evaluations
- d. Review of accident causes and recent accidents

12. Drafting a Radiological Safety Plan (student exercise)

- a. Attendees prepare program
- b. Exercise review

Radiation Safety for Authorized Users and Supervisors of Authorized Users Course Outline

This course is designed for authorized users of radioactive materials and supervisors of authorized users. It is an introductory course that is suitable for those with no previous training in radiation safety and as a refresher course for those who have had previous formal training.

This course provides training in the following subjects:

1. Atomic and Nuclear Structure
2. Principles of Radioactive Decay
3. Radioactive Decay Processes, including alpha emission, gamma emission and beta emission
4. Radiation Detection Instruments including gas filled instruments, scintillation detectors and semi-conductors
5. Interaction of Radiation with Matter including interaction of alpha particles, beta particles and gamma rays
6. Biological Effects of Radiation
7. Shielding, Distance, and Exposure Time
8. Radiological Surveys, Records and Documentation